

# **Navy Region Southwest Response to Changing Energy Markets**

## **Federal Utilities Partnership Working Group**

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# Topics

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## ACOS FACILITIES

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- **Navy Region Southwest (NRSW) Electricity Background**
- **Energy Actions Prior to Spring 2000**
- **NRSW Mobilization**
- **Changes in Operations & Behavior**
- **Demand-Side Initiatives**
- **NRSW Long Term Energy Strategy**

# NAVY REGION SOUTHWEST

## SAN DIEGO AREA



● *NAVAL BASE  
POINT LOMA*

● *NAVAL BASE  
CORONADO*

● *NAVAL BASE  
SAN DIEGO*

# NRSW Electricity Background

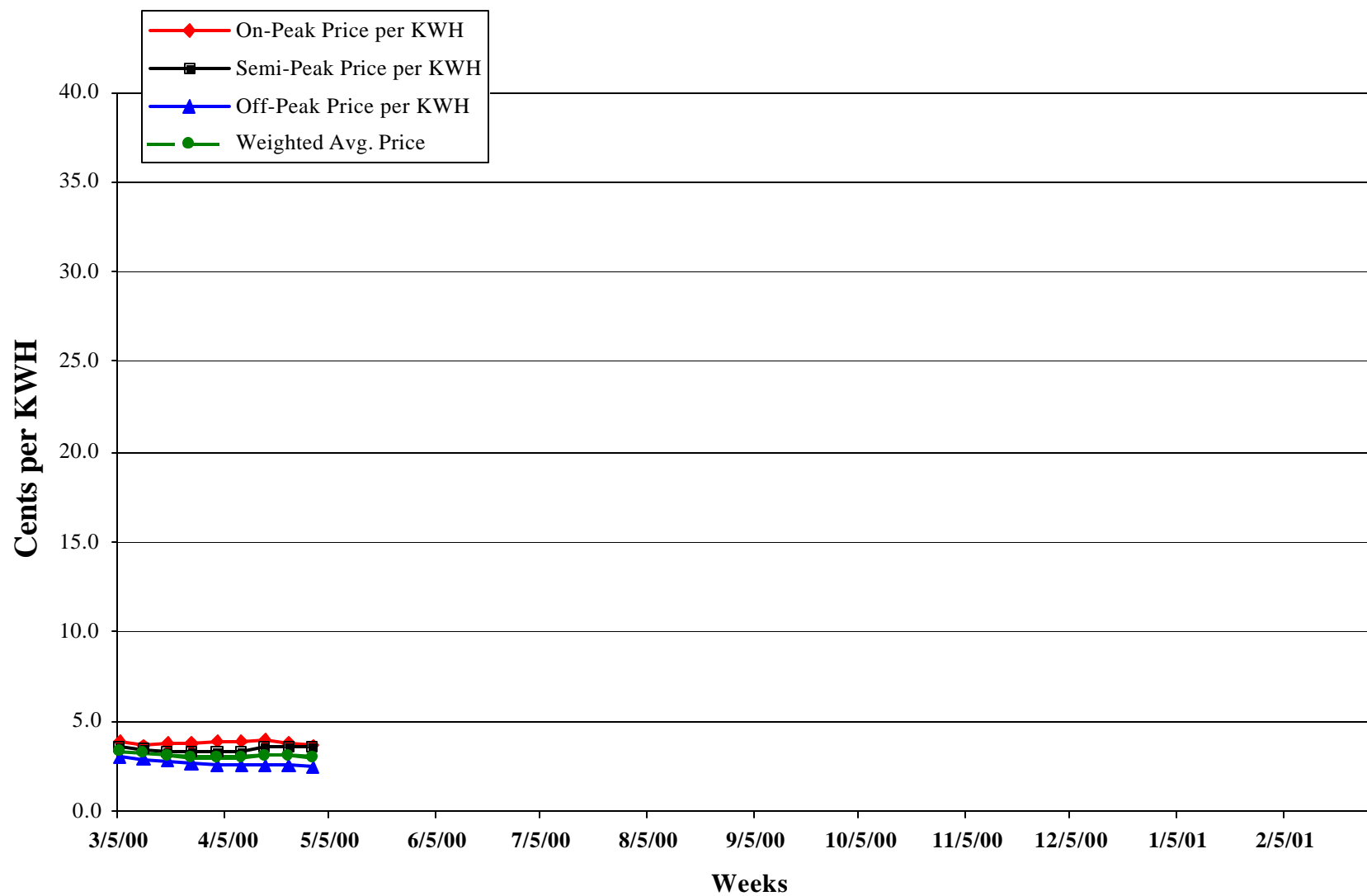
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## ACOS FACILITIES

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- **Navy largest SDG&E customer**
- **Peak PWC San Diego demand 130 MW**
  - 3% of SDG&E peak load**
  - 0.3% of California peak load**
- **Average demand 90 MW**
- **Annual consumption 800,000 MWH**
- **FY99 bill \$49.5 million**
- **FY00 bill \$70.7 million**

**Weekly Electricity Rates per KWH - Commodity Only**  
**SDG&E A6 (Large Time of Use) Rate**  
**3/5/00 - 4/30/00**



# Energy Actions Prior to Spring 2000

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## ACOS FACILITIES

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- **Re-established Utility Demand Reduction Program**
- **Installed T8 fluorescent lighting & L.E.D. exit signs throughout San Diego**
- **Started buying power at 69 KV to reduce costs; boosted distribution to 12 KV to reduce losses**
- **Expanded electric, water & gas metering**
  - **Over 3600 electric meters, 2/3 of which are demand-interval meters**
- **Established NRSW Regional Energy Program Office**
- **Set energy-efficient procurement policy**
- **Put 35 KW of photovoltaic power on line**
- **Started Resource Efficiency Management (REM) program**
  - **Long-term approach vs “snapshot” surveys**
  - **Combines knowledge of customer with energy expertise**
  - **Focus on operational & behavioral changes**

# Energy Actions Prior to Spring 2000

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## ACOS FACILITIES

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**NRSW installed this 21.6 KW photovoltaic system at Bldg 678, Naval Base Coronado, in 2000. It produces about 108 KWH per day.**



# Energy Actions Prior to Spring 2000

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## ACOS FACILITIES

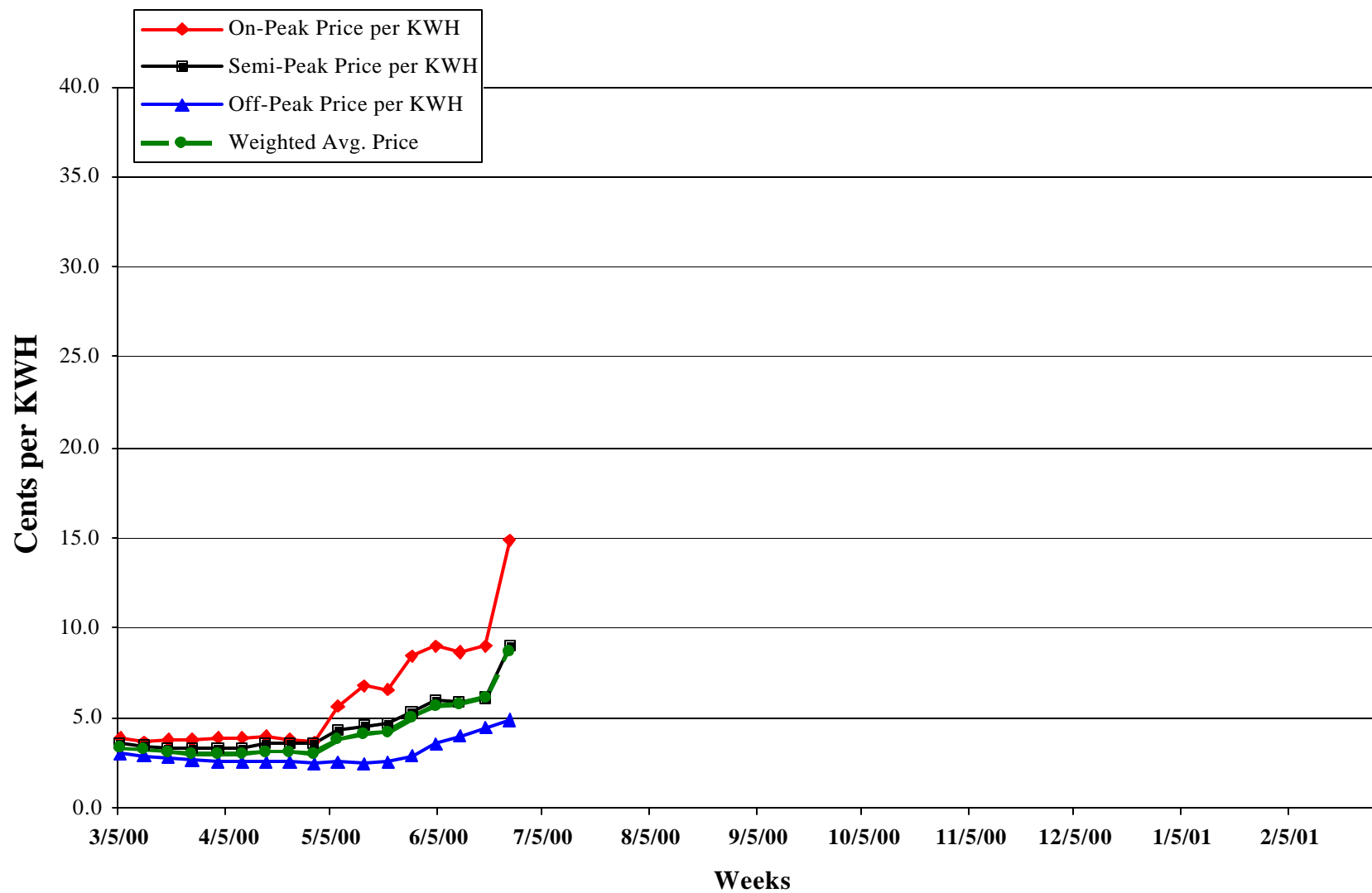
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**NRSW installed three 225 KW wind turbines at San Clemente Island. These units provide electricity directly into the Navy's electrical grid and reduce diesel air emissions on the island.**



**Weekly Electricity Rates per KWH - Commodity Only**  
**SDG&E A6 (Large Time of Use) Rate**  
**3/5/00 - 6/30/00**



# NRSW Mobilization

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## ACOS FACILITIES

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- **Broadcast daily energy updates and load reduction alerts via e-mail; set permanent demand reduction condition early August**
- **Sent top-level messages prescribing load reduction measures**
- **Banned all air conditioning except medical and critical equipment**
- **Set policy to turn off PCs and office equipment at night**
- **Deployed 11 energy “specialists” to field**
- **Issued weekly load profiles for each base plus their 10 largest consumers**
- **Weekly electricity action meetings**
- **Convened “Electricity Summits”**
- **Daily DoE/CEC conference calls, December - present**
  - **Naval messages to Commanding Officers**
  - **E-mails & conference calls with Navy & Marine Corps Action Officers in California**

# Changes in Operations & Behavior

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## ACOS FACILITIES

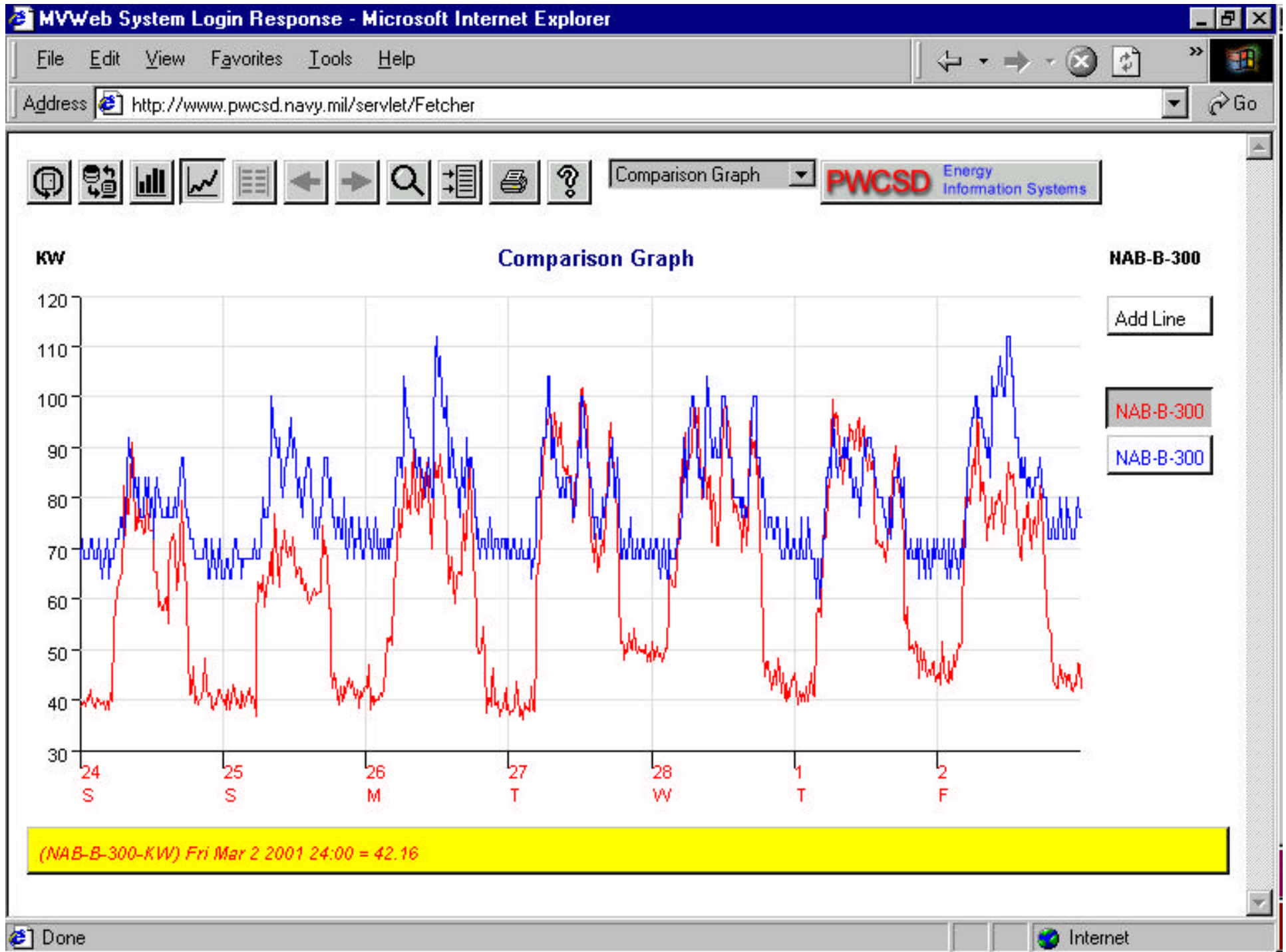
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### **Short Term Operational Changes**

- **Scheduled energy-intensive operations & training outside peak demand periods, e.g., equipment testing, simulator use**
- **Compressed training schedules, e.g., 4-day week at ASW simulator facility**
- **Restrictions on administrative & holiday lighting**

### **Personnel Behavior Changes, through:**

- **All-hands energy training**
- **Building energy monitor network**
- **Continuing 1-on-1 discussions with key personnel**
- **Briefs to focus groups, e.g., Command Master Chiefs**
- **Recognition of top performers**
- **Web-enabled access to building electrical demand data**



# Changes in Operations & Behavior

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## ACOS FACILITIES

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**Example: Scheduling energy-intensive training outside peak demand periods**

**MVWeb showed a 120 KW spike at Bldg 3533, Naval Base San Diego. The spike is caused by a large pump used to train sailors. The instructors in the photo readily agreed to minimize use of this pump and to schedule it outside peak demand periods.**



# Changes in Operations & Behavior

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## ACOS FACILITIES

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### **Example: Recognition of Top Performers**

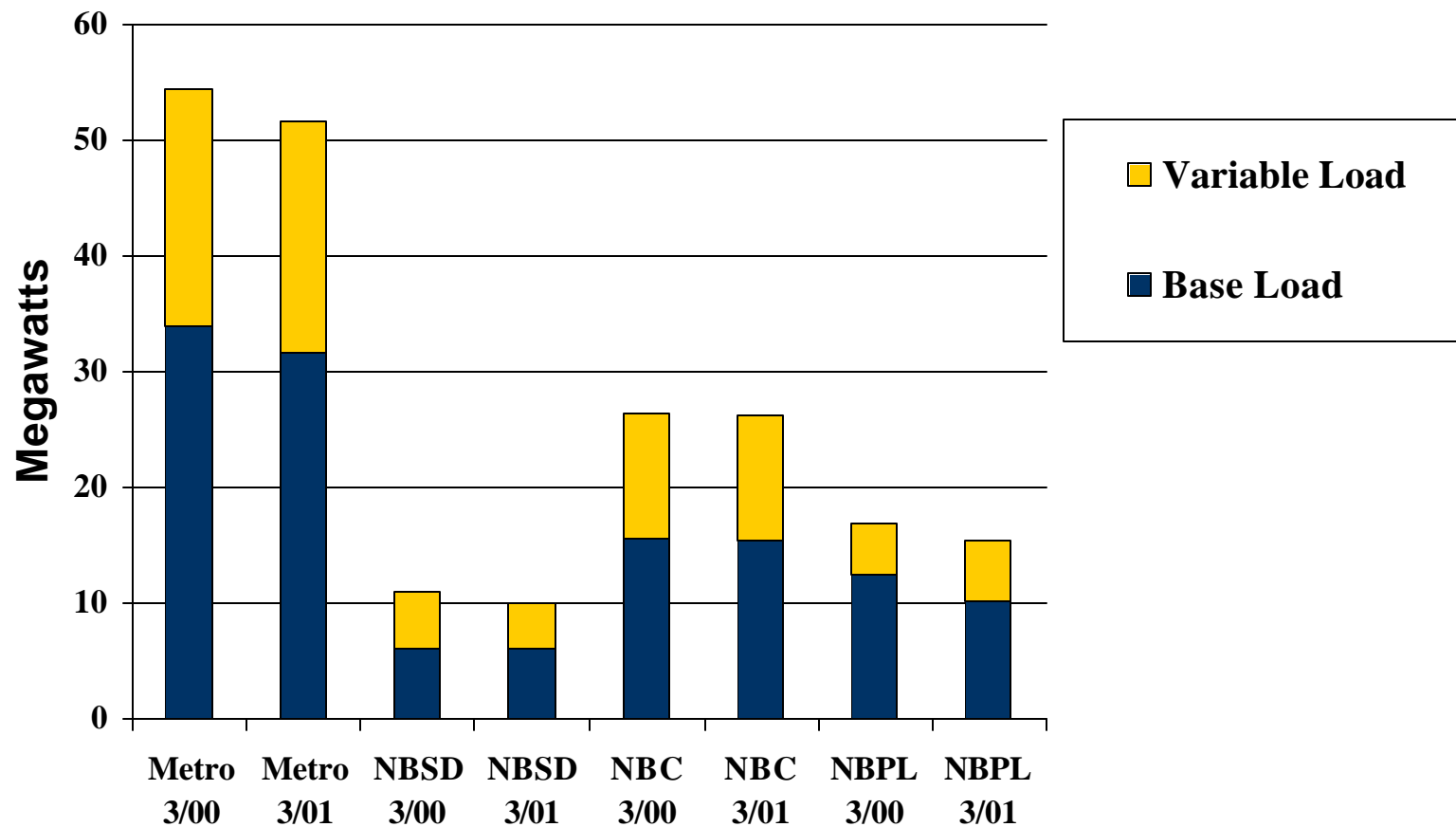
**In October 2000 the Commanding Officer, Naval Base San Diego presented the Civilian Meritorious Service Medal to Mr. Forrest Roark, Site Manager for Bachelor Housing. Mr. Roark has been proactive in installing energy efficient washers and refrigerators and is taking the lead in installing compact fluorescent lamps throughout bachelor housing.**





# Shore Demand Components

## March 01 vs. March 00



# Changes in Operations & Behavior

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## ACOS FACILITIES

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### Energy Awareness Activities

- **Extensive Energy Awareness Week activities, all bases**
- **Daily newspaper, TV & radio coverage**
- **Frequent high-level briefings**
- **On-going, all-hands energy awareness training**
- **Articles in Navy & Marine Corps newspapers, “plan of the day”, other publications**
- **100’s of banners, signs and marquee notices**
- **Flyers & community meetings for family housing residents**
- **NRSW energy web site**



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# REPO

## Regional Energy Program Office

Tuesday, March 06, 2001

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You are Visitor Number: 59 since February 5, 2001

## Regional Energy Program Office

Welcome to the Navy Region Southwest (NRSW), Regional Energy Program Office (REPO) web site. This site provides energy management data, program information, references, links, and practical tools to NRSW energy and facilities managers to help them operate their shore facilities more efficiently. The information provided should also be of use to other utility customers of the Navy Public Works Center (PWC), San Diego. REPO will keep this site as current as possible and will continue to add value-added tools and resources as they become available. Please contact [REPO](#) with any suggestions for improving this site.

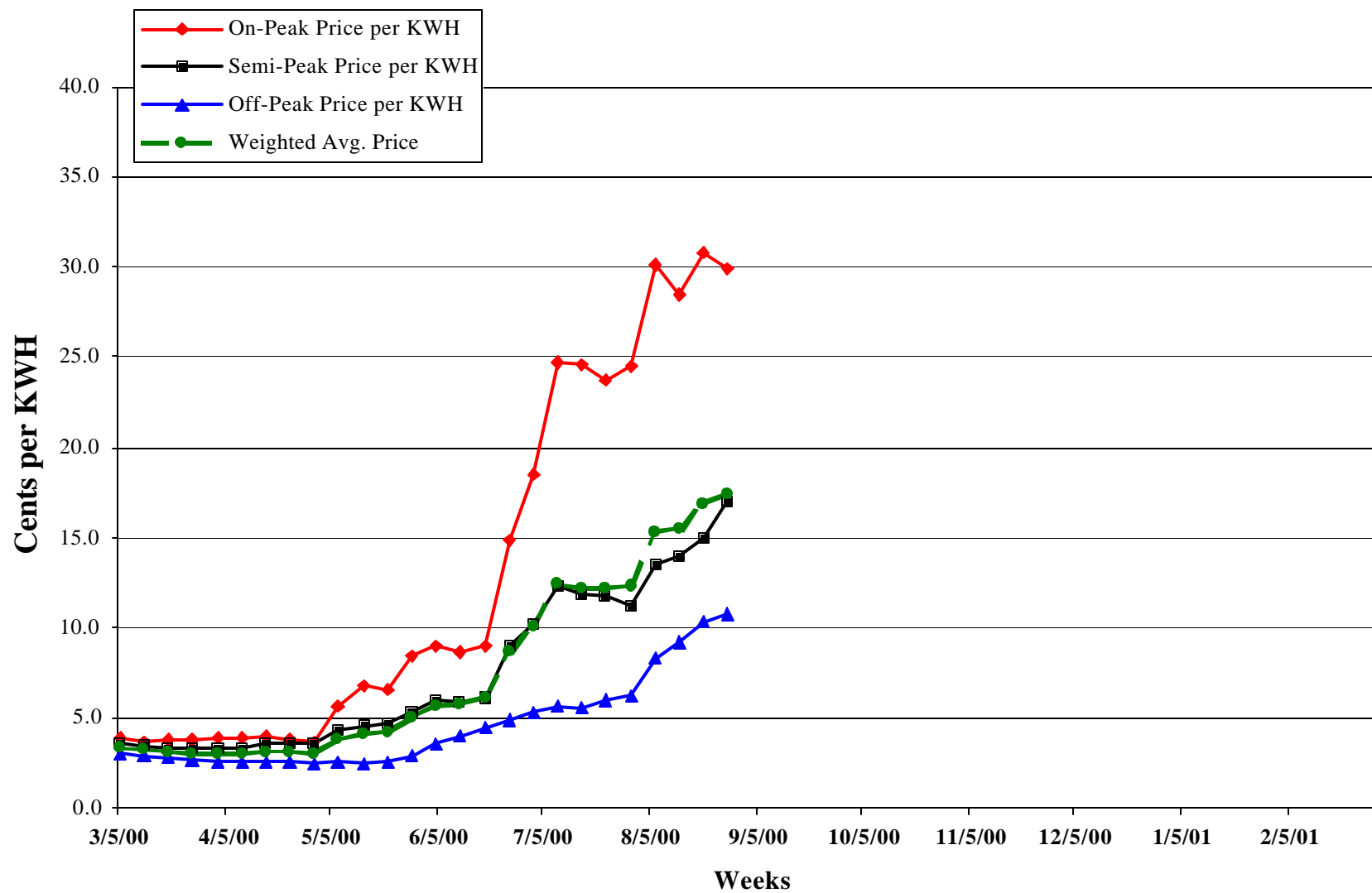
### About This Site

In times of skyrocketing energy prices and shortages of supplies, such as San Diego experienced in the summer of 2000, good energy management is the first line of defense

# Weekly Electricity Rates per KWH - Commodity Only

## SDG&E A6 (Large Time of Use) Rate

### 3/5/00 - 8/31/00



# Demand-Side Initiatives

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## ACOS FACILITIES

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### Energy Efficiency Projects & Initiatives:

- **Awarded \$21 million in utility-financed demand-side management (DSM) projects with 5 year simple payback (Sep 00)**
- **Selected energy savings performance contractor (ESPC) (Nov 00)**
- **Awarded \$2.1 million ESPC delivery order for HID retrofits with 6 year simple payback (Mar 01)**
- **Developing \$30 - \$40 million in additional DSM & ESPC projects for 2001 award**
- **Eliminating ~ 50,000 incandescent light bulbs**
- **Plan to replace 1,200 refrigerators**

# Demand-Side Initiatives

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ACOS FACILITIES

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## Distributed Generation Initiatives:

- **Developing ESPC D.O. for two 75 KW microturbines at NAB Coronado, waste heat will be used to pre-heat existing high-temperature hot water return system**
- **Developing ESPC D.O. for 30 KW photovoltaic system**
- **Developing ESPC D.O. for possible cogen plant expansion at Naval Medical Center, San Diego**
- **Evaluating economics of photovoltaics**



# Demand-Side Initiatives

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ACOS FACILITIES

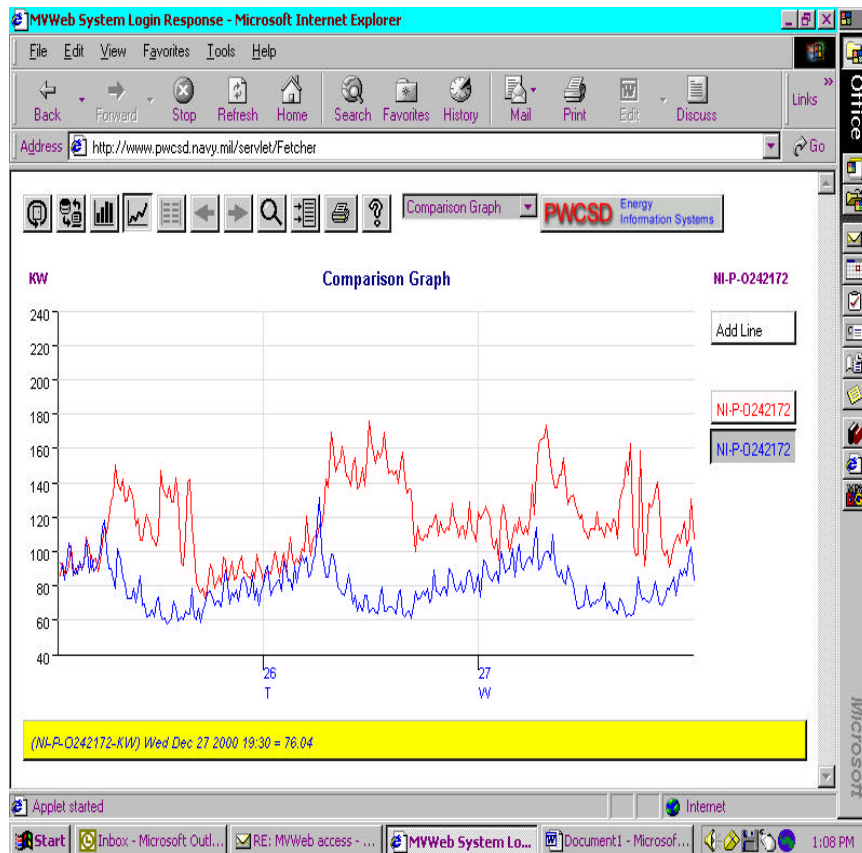
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## Demand Reduction Initiatives:

- **Using MVWeb as primary tool to:**
  - **Identify electricity usage anomalies and demand reduction opportunities,**
  - **Work with building operators to help them find ways to reduce demand, and**
  - **Measure effectiveness of energy management efforts**
- **Developing initiatives to fit forthcoming SB-6 grant program**
- **Received \$1.5M in grants & incentives to date**

# Demand-Side Initiatives

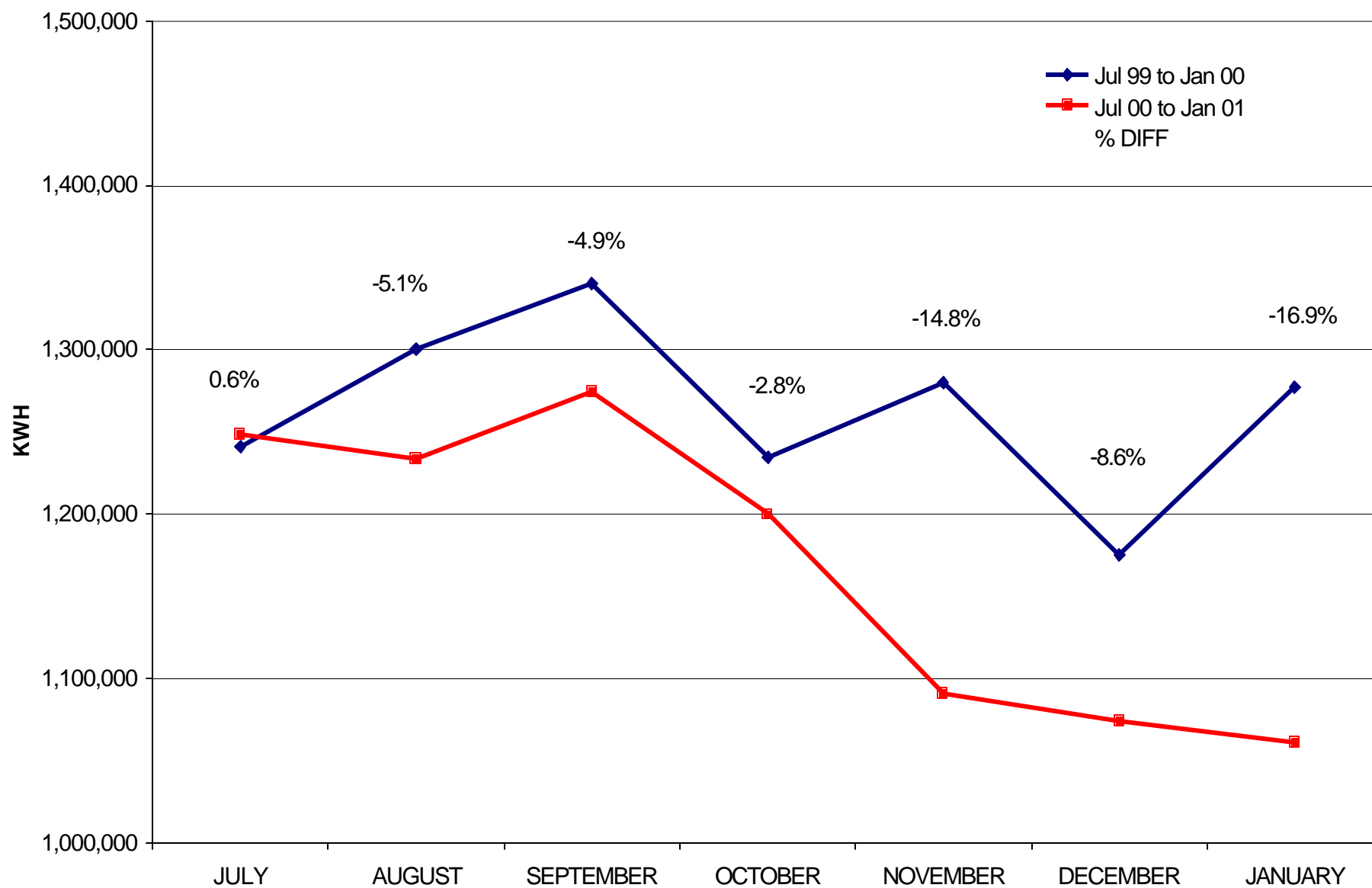
## ACOS FACILITIES



**Example: Use of MVWeb to identify electricity usage anomalies and demand reduction opportunities**

**The MVWeb screen at left showed an unexplained daily step-growth in demand at Bldg 497, the Deep Submergence Unit at Naval Base Coronado. A Chief at the building quickly identified this load as their 40 Hp air compressor, which is oversized for their current needs. He readily agreed to replace this unit with a 5 – 10 Hp unit. This will reduce the building's peak and base loads by over 30 KW with no impact on operations.**

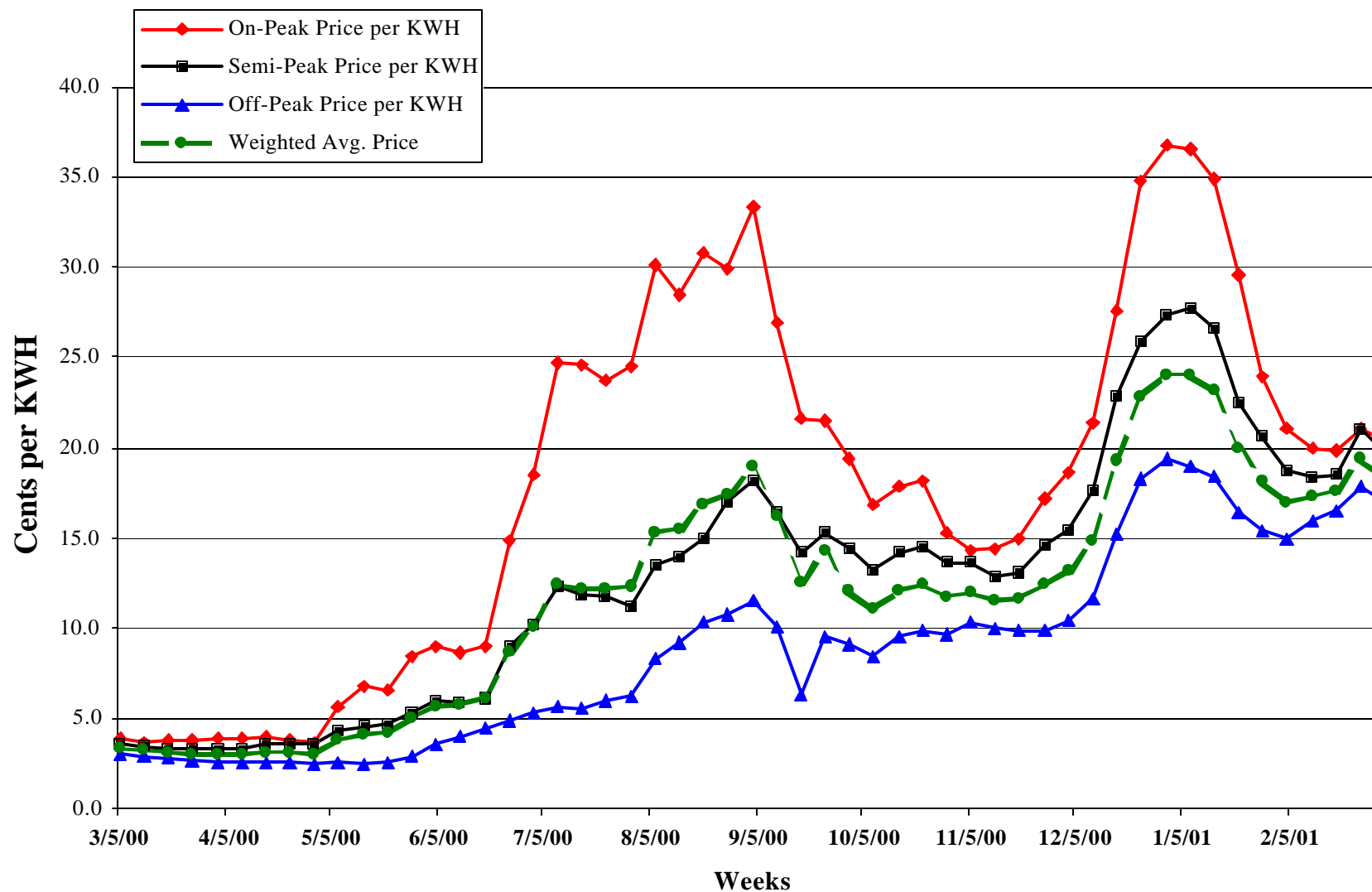
## NRSW Metro Area Average Daily Consumption



# Weekly Electricity Rates per KWH - Commodity Only

## SDG&E A6 (Large Time of Use) Rate

### 3/5/00 - 3/4/01



# NRSW Long Term Energy Strategy

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## ACOS FACILITIES

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- **Implement measures and innovations to reduce energy and water consumption**
- **Implement measures and innovations to reduce energy and water costs**
- **Increase reliability of electricity and natural gas systems**
- **Elevate energy awareness through a year-round energy awareness/training program**